Express Mail No. ET169352968US

FORM PTO-1390 (REV. 11-2000) U S DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY 'S DOCKET NUMBER: CIRTES2

U S APPLICATION NO. (If known, see 37 CFR 1 5): 09/856311

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/FR99/02790	15 November 1999	19 November 1998

TITLE OF INVENTION: METHOD FOR MAKING MECHANICAL PARTS BY DECOMPOSITION INTO LAYERS

APPLICANT(S) FOR DO/EO/US: BARLIER, Claude

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. [ ] This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. [X] The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. [ ] is attached hereto (required only if not communicated by the International Bureau).
   b. [X] has been communicated by the International Bureau.
   c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US).
6. [X] An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. [X] is attached hereto.
   b. [ ] has been previously submitted under 35 U.S.C. 154(d)(4).
7. [X] Amendments to the claims of the International Aplication under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. [ ] are attached hereto (required only if not communicated by the International Bureau).
   b. [ ] have been communicated by the International Bureau.
   c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.
   d. [X] have not been made and will not be made.
8. [ ] An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).
9. [X] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). (unsigned)
10. [ ] An English lanugage translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. [ ] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. [ ] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. [X] A FIRST preliminary amendment.
14. [ ] A SECOND or SUBSEQUENT preliminary amendment.
15. [ ] A substitute specification.
16. [ ] A change of power of attorney and/or address letter.
17. [ ] A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. [ ] A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. [ ] A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. [X] Other items or information: Drawings (2 sheets)
    Abstract
    Express Mail Transmittal
    Postcard Receipt

U.S. 09/856311	INTERNATIONAL APPLICATION NO PCT/FR99/02790	ATTORNEY'S DOCKET NUMBER CIRTES2

21. ☒ The following fees are submitted:	CALCULATIONS PTO USE ONLY	
BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):		
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO **$1000.00**		
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO **$860.00**		
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **$710.00**		
International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) **$690.00**		
International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) **$100.00**		
ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 860.00	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☒ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	$ 130.00	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	8 - 20 =	0	x **$18.00**	$	
Independent claims	1 - 3 =	0	x **$80.00**	$	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ **$270.00**	$	
TOTAL OF ABOVE CALCULATIONS =				$ 990.00	
☒ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2. +				$ 495.00	
SUBTOTAL =				$ 495.00	
Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				$	
TOTAL NATIONAL FEE =				$ 495.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property +				$	
TOTAL FEES ENCLOSED =				$ 495.00	
				Amount to be refunded:	$
				charged:	$

a. ☒ A check in the amount of $ 495.00 to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of $ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 03-2405 . A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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SIGNATURE

COHEN, Gary M., Esq.
NAME

Reg. No. 28,834
REGISTRATION NUMBER

BEC 805

Applicant: C.I.R.T.E.S.
Application No.: (not yet assigned)
Filed:
For: METHOD FOR MAKING MECHANICAL PARTS BY DECOMPOSITION INTO LAYERS

Attorney's Ref.: CIRTES2

STATEMENT CLAIMING SMALL ENTITY STATUS
(37 C.F.R. §1.9(f) and §1.27(c)) - SMALL BUSINESS CONCERN

I hereby state that I am

[ ] the owner of the small business concern identified below:
[X] an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF SMALL BUSINESS CONCERN: C.I.R.T.E.S.
ADDRESS OF SMALL BUSINESS CONCERN: 29bis, rue d'Hellieule
F-88100 Saint Die, France

I hereby state that the above-identified small business concern qualifies as a small business concern as defined in 13 C.F.R. Part 121 for purposes of paying reduced fees to the United States Patent and Trademark Office. Questions related to size standards for a small business concern may be directed to: Small Business Administration, Size Standards Staff, 409 Third Street, S.W., Washington, D.C. 20416.

I hereby state that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention described in:

[ ] the specification filed herewith, with title as listed above.
[X] the application identified above.
[ ] the patent identified above.

If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights in the invention must file separate statements as to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 C.F.R. §1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 C.F.R. §1.9(d), or a nonprofit organization under 37 C.F.R. §1.9(e).

Each person, concern or organization having any rights in the invention is listed below:

[X] no such person, concern or organization exists.
[ ] each such person, concern or organization is listed below.

NAME
ADDRESS
[ ] INDIVIDUAL [ ] SMALL BUSINESS CONCERN [ ] NONPROFIT ORGANIZATION

NAME
ADDRESS
[ ] INDIVIDUAL [ ] SMALL BUSINESS CONCERN [ ] NONPROFIT ORGANIZATION

Separate statements are required from each named person, concern or organization having rights to the invention stating their status as small entities. (37 C.F.R. §1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. §1.28(b))

NAME OF PERSON SIGNING: BARLIER
TITLE OF PERSON IF OTHER THAN OWNER: Directeur
ADDRESS OF PERSON SIGNING: 29bis, rue d'Hellieule
F-88100 Saint Die, France

SIGNATURE BARLIER DATE 25/6/01

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Tél 33 (0)3 29 55 11 71 - Fax 33 (0) 3 29 55 10 45

Express Mail No. ET169352968US

PATENT
cirtes2.d01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of :

BARLIER, Claude :

International Application
No. PCT/FR99/02790 :

International Filing
Date: 15 November 1999 :

For a Patent for a :

METHOD FOR MAKING MECHANICAL PARTS
BY DECOMPOSITION INTO LAYERS : 18 May 2001

PRELIMINARY AMENDMENT

Box PCT
Commissioner for Patents
Washington, D.C. 20231

Sir:

This Preliminary Amendment accompanies a Transmittal Letter entering the above-identified PCT application into its national phase for the United States. Prior to examination, please amend the claims as follows.

IN THE CLAIMS

Please amend the following claims:

4. (Amended) The method as claimed in claim 1, characterized in that the laminations are assembled to form a self-supporting structure.

5. (Amended) The method as claimed in claim 1,

characterized in that the laminations are assembled on a mount plate (19) equipped with bores (20).

6. (Amended) The method as claimed in claim 1, characterized in that assembly is achieved using a single shaft (17, 21) and an insert rod (22).

7. (Amended) An elemental lamination for producing a mechanical part, particularly a prototype, by assembly, characterized in that it is obtained by implementing a method as claimed in claim 1.

REMARKS

Prior to examination, entry of the foregoing rewritten claims to delete multiple dependencies and bring the claims into closer compliance with 37 C.F.R. §1.75(c), is respectfully requested in accordance with the provisions of 37 C.F.R. §1.115. Marked up versions of the rewritten claims are enclosed with this Preliminary Amendment, on a separate page, in accordance with the requirements of 37 C.F.R. §1.121(c). An early and favorable consideration of the present application, as amended, is respectfully requested.

Respectfully submitted,

COHEN, GARY M., ESQ.
Reg. No. 28,834
Attorney for Applicant

MARKED UP VERSIONS OF REWRITTEN CLAIMS

4. (Amended) The method as claimed in claim 1 [any one of claims 1 to 3], characterized in that the laminations are assembled to form a self-supporting structure.

5. (Amended) The method as claimed in claim 1 [any one of claims 1 to 3], characterized in that the laminations are assembled on a mount plate (19) equipped with bores (20).

6. (Amended) The method as claimed in claim 1 [any of claims 1 to 5], characterized in that assembly is achieved using a single shaft (17, 21) and an insert rod (22).

7. (Amended) An elemental lamination for producing a mechanical part, particularly a prototype, by assembly, characterized in that it is obtained by implementing a method as claimed in claim 1 [any one of claims 1 to 6].

METHOD FOR MAKING MECHANICAL PARTS BY DECOMPOSITION INTO LAYERS

The subject of the present invention is an improvement to methods for producing mechanical parts and objects, particularly prototypes, from a specific computer-aided design of the type comprising the successive phases of:

- manufacturing parts in elemental layers or laminations;
- building up the collection of layers;
- assembling the layers;

said laminations resulting from a prior breakdown of the part along planes and one or more defined steps.

The invention is also aimed at the elemental laminations thus produced, and at the prototypes obtained by assembling said elemental laminations.

A rapid prototyping method of this type was the subject of European Patent EP-0 585 502-B1, the content of which is incorporated herein entirely by way of reference and is known by the name STRATOCONCEPTION (registered trade mark).

This method is entirely satisfactory within the limits of the applications specified in that patent, the various laminations essentially being positioned and assembled using inserts, the shape and position of which are determined also by specific software.

The fact of providing inserts on the inside, in the case of parts of a certain thickness, nonetheless makes the implementation process, which in other respects is very flexible and effective, somewhat cumbersome.

Furthermore, it is not possible easily to provide inserts on the inside in the case of laminations whose working

cross section (thickness of the final part) is small, which laminations are needed for obtaining very fine, and therefore more precise, modeling, or for producing parts whose complex structure entails a breakdown passing through laminations of very small lateral thickness.

The object of the invention is to propose a method according to the general concept of patent 0 585 502 that also makes it possible if required not to use inserts for the internal assembly of the laminations to each other and their positioning with respect to each other.

According to the invention, this result is obtained with a method for producing mechanical parts and objects, particularly prototypes, from a specific computer-aided design of the type comprising the successive phases of:

- manufacturing parts in elemental layers or laminations;
- building up the collection of layers;
- assembling the layers;

said laminations resulting from a prior breakdown of the part along planes and one or more defined steps, characterized in that the unitary laminations determined by the breakdown of the part employing software and machined accordingly, essentially comprise:

- a central portion effectively corresponding to the lamination with the desired shape and desired thickness for obtaining the finished part,
- an outer portion of roughly the same thickness, at least partially surrounding said central portion,
- frangible bridges connecting said central and outer portions together.

The laminations are then put together either by superposition or by shoring up the various laminations, the outer portions of each lamination finally forming a kind of supporting surround enclosing the reconstructed part to which it is connected by the frangible bridges.

It will be understood that the part is broken down and

assembled systematically through the use of the specific software which automatically positions and provides the bridges, the posts, the inner or outer inserts.

Thus, positioning and holding inserts are added to the outer surround. These inserts allow the laminations to be positioned indirectly by mounting and assembly (for example, but without implying any limitation, by bonding).

The supporting surround is then easily removed, because of the frangible bridges, once the laminations have been positioned and assembled.

The surround will enclose the final part from the smallest distance, for reasons of precision of assembly and economy of material, which in all instances will necessitate pressing by clamping.

The pressing system may be external, for example with a mount plate, or in-built, the surround being self-supporting.

The invention will be better understood with the aid of the description given hereinafter with reference to the appended drawings, in which:

- figure 1 illustrates schematically in the form of a diagram the principle of implementation of the method known as stratoconception;
- figure 2 illustrates schematically a part reconstructed from elemental laminations with an outer surround, according to the invention;
- figures 3A to 3F depict alternative forms of the frangible bridges and of the outer surrounds;
- figure 4 depicts the part of figure 2 with a self-supporting holding and assembly structure;
- figure 5 depicts an alternative form of the part of figure 2 with a holding and assembly structure that involves a mount plate;
- figures 6 and 7 depict an alternative form of the

part of figure 2, with an alternative form of assembly of the same type as that of figures 2 and 5;

– figure 8 illustrates, in part section, one possibly assembly with external inserts for complex shapes and thin laminations.

Reference is made first of all to figure 1.

The general principle consists, by using specific software (1), in cutting a part that is to be prototyped into laminations, the laminations being machined by rapid micromachining (2), the machine being controlled by the software (1), from a material (3) in sheet form.

The various laminations are assembled into a collection (4) comprising inserts (5) to finally obtain a prototype (6) after finishing.

The software governs the choice of slicing/stratification plane, of lamination profile step, of scale ratio, of precision and of the position of the inserts.

Once the various sheet parameters (dimensions, material, choice of direction of clearance) and the machining parameters (cutting rate, cutter diameter, etc) have been input, the entire machining program is transmitted by the software which controls the cutting robot.

Reference will now be made to figure 2.

According to the invention, the method implemented makes it possible to obtain a multitude of elemental laminations (7) which, once assembled, reproduce the part to be reproduced (8) connected to an outer surround (9) by bridges (10).

It will be understood that, following appropriate assembly, the elimination of the surround and of the bridges results in the obtaining of the final part (8),

particularly the prototype.

The laminations (7) may have different and highly varied geometric shapes at the bridges (10) and elements (11) that finally form the outer surround (9).

Various alternative forms are depicted non-limitingly in figures 3A to 3F.

Figure 3A depicts three alternative forms of bridges at the zone of weakness (12) where cutting will occur.

In figure 3B, it will be noted that the distribution of the bridges, for example three of these, may be uniform around the periphery of the central portion (in this particular instance at 120°).

In figure 3C, the alternative form consists in the elements (11) being rounded and enveloping sectors (13).

In figure 3D, three sectors such as (13) are joined together to form a single collar (14) which fully surrounds the part in a ring (15) in the depiction of figure 3E.

Finally, in figure 3F, the orifices (16') present in each structure and used to position and to assemble the bridges together, will no longer be circular (16) as they were in the previous figures, but will have a polygonal geometric cross section, which will allow their number in one and the same lamination to be limited, for the same precise positioning.

The laminations are assembled on shafts (17) of which, in figure 4, there are three, these for example, but non-limitingly, having wing nuts (18) for clamping. In this instance, the structure is self-supporting.

In figure 5, there are two shafts (21) fixed on a mount plate (19) equipped with bores (20).

This type of assembly may also be used when the method is implemented systematically and, for example, for teaching or even recreational purposes.

In figures 6 and 7, the structures are identical to those of figures 4 and 5, with just one shaft such as (17, 21) and one rod (22) of the insert type to provide positioning.

Finally, figure 8 depicts a complex alternative form with inserts (23) for extremely thin laminations, each insert involving just a few contiguous laminations.

Of course, each elemental lamination will be machined by micromachining in accordance with the general method known as "Stratoconception", possibly with turning over, if necessary, in the course of machining, according to the method described in a patent application filed simultaneously by the applicant and to which express reference is made.

This method allows the manufacture of prototypes of parts of very complex shapes, very rapidly and at low cost. It also opens interesting opportunities for teaching and recreational applications.

CLAIMS

1. A method for producing mechanical parts and objects, particularly prototypes, from a specific computer-aided design of the type comprising the successive phases of:
   - manufacturing parts in elemental layers or laminations;
   - building up the collection of layers;
   - assembling the layers;

   said laminations resulting from a prior breakdown of the part along planes and one or more defined steps, characterized in that the unitary laminations determined by the breakdown of the part employing specific software and machined accordingly, essentially comprise:
   - a central portion (8) effectively corresponding to the lamination with the desired shape and desired thickness for obtaining the finished part,
   - an outer portion (11) of roughly the same thickness, at least partially surrounding said central portion,
   - frangible bridges (10) connecting said central and outer portions together.

2. The method as claimed in claim 1, characterized in that each lamination comprises circular orifices (16) for positioning the bridges and assembling them together.

3. The method as claimed in claim 1, characterized in that each lamination comprises orifices (16') with polygonal geometric cross section, for positioning the bridges and assembling them together.

4. The method as claimed in any one of claims 1 to 3, characterized in that the laminations are assembled to form a self-supporting structure.

5. The method as claimed in any one of claims 1 to 3, characterized in that the laminations are assembled on a mount plate (19) equipped with bores (20).

6. The method as claimed in any of claims 1 to 5, characterized in that assembly is achieved using a single shaft (17, 21) and an insert rod (22).

7. An elemental lamination for producing a mechanical part, particularly a prototype, by assembly, characterized in that it is obtained by implementing a method as claimed in any one of claims 1 to 6.

8. A mechanical part, particularly a prototype, characterized in that it is obtained by assembling laminations as claimed in claim 7.

ABSTRACT

The invention concerns a method for making mechanical parts and objects, in particular prototypes, from a specific computer-assisted design comprising the following successive steps: making the parts in elementary layers or strata; reconstructing the assembly of layers; assembling the layers, said layers being derived from previous decomposition according to specific planes and one or several step(s). The invention is characterised in that the unit layers determined by the decomposition of the part using a software and machined accordingly comprise essentially: a central portion (8) effectively corresponding to the layer having the shape and thickness desired for the finished part; an outer portion (11) substantially of same thickness, enclosing at least partly said central portion; cleavable hasps (10) linking said central and outer portions together.

FIG. 1

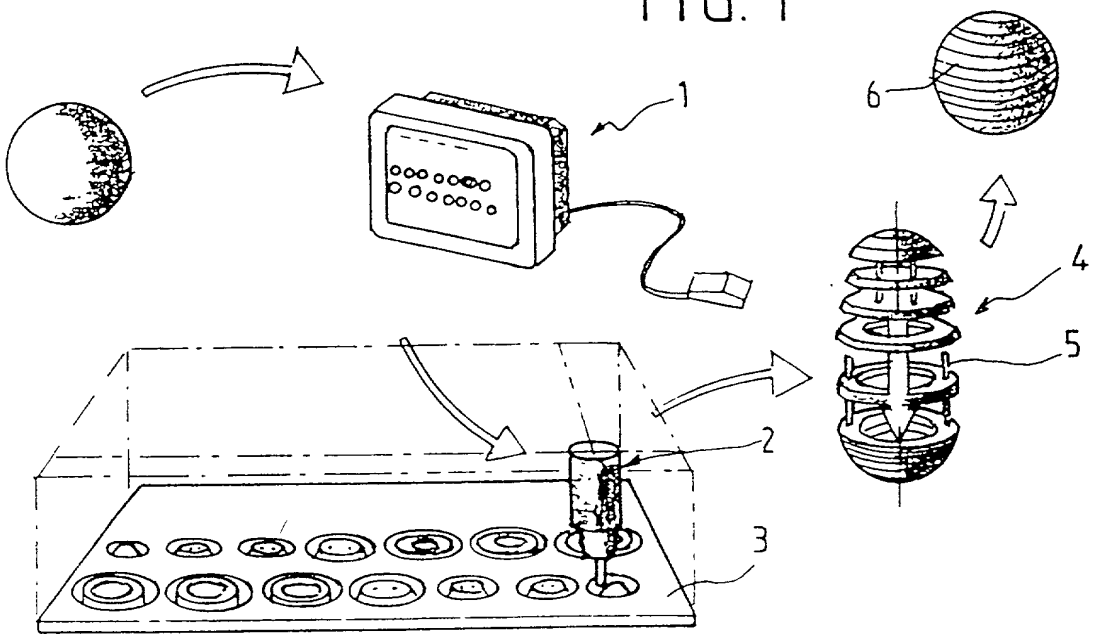


FIG. 2

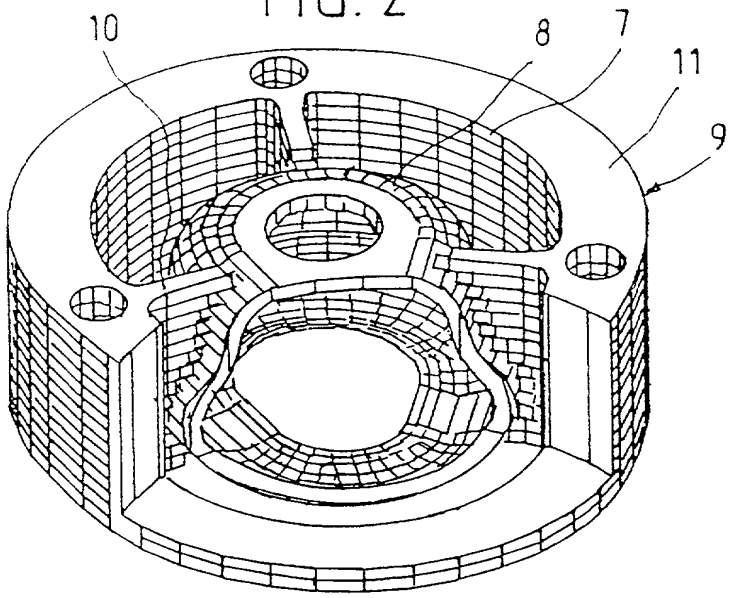


FIG. 3A

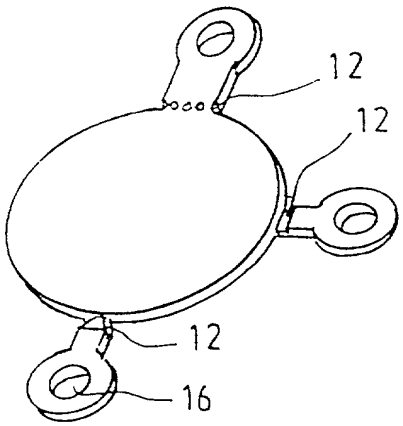


FIG. 3B

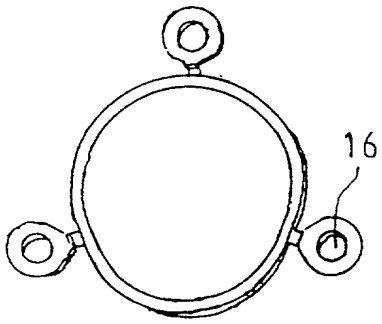


FIG. 3C

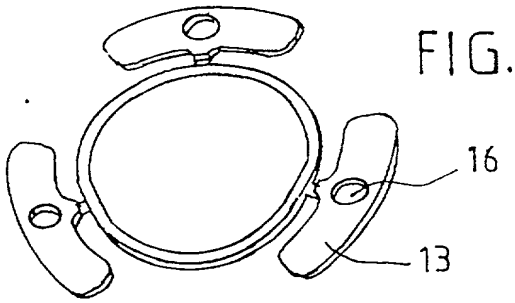


FIG.4

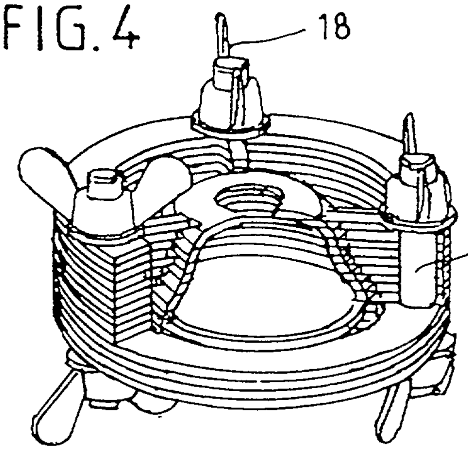


FIG.6

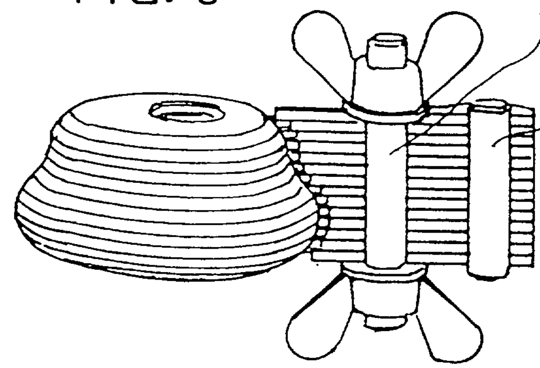


FIG.5

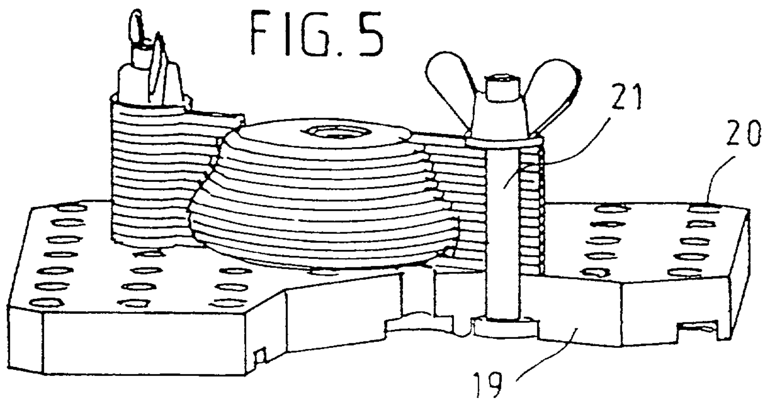


FIG.3D

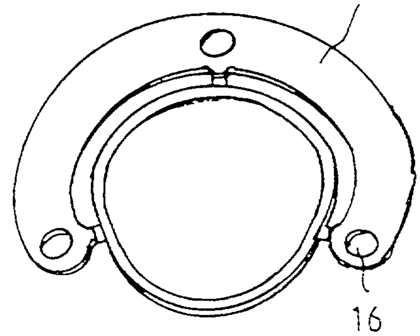


FIG.7

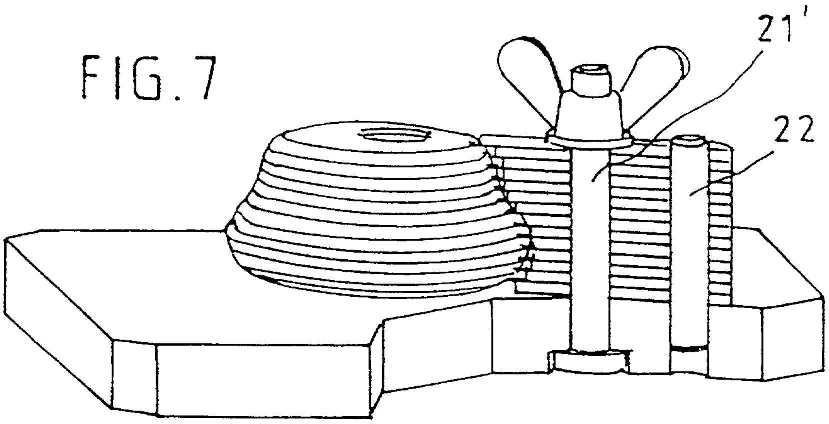


FIG.3E

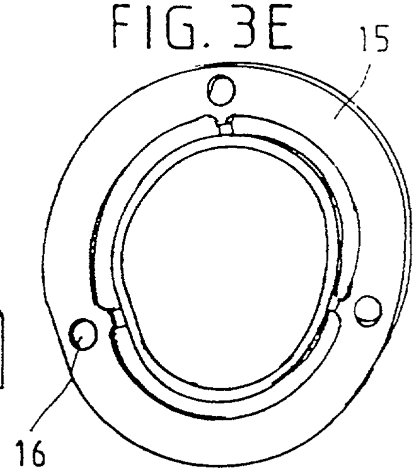


FIG.8

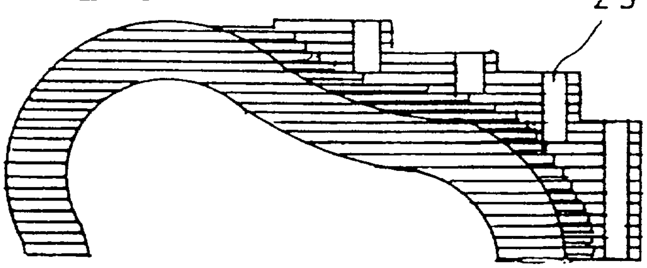
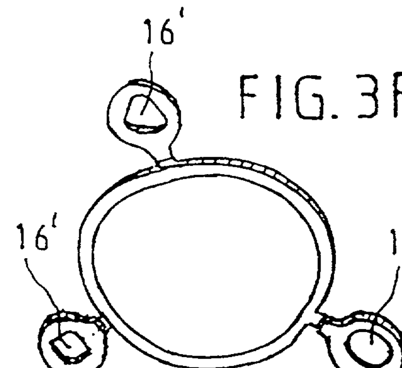


FIG.3F



BRL 8us

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY
(Includes Reference to PCT International Applications)

Attorney's Reference:
CIRTES2

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: METHOD FOR MAKING MECHANICAL PARTS BY DECOMPOSITION INTO LAYERS, the specification of which (check only one item below):

[ ] is attached hereto.

[ ] was filed as United States Patent

Application No. _____

on _____

and was amended

on _____ (if applicable).

[X] was filed as PCT International Application

Number PCT/FR99/02790

on 15 November 1999

and was amended under PCT Article 19

on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 35 U.S.C. 365(b) of any foreign application(s) for patent or inventor's certificate, or under 35 U.S.C. 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. §119:

COUNTRY (if PCT, indicate "PCT")	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 U.S.C. §119
France	98/14687	19 November 1998	[X] YES [ ] NO
			[ ] YES [ ] NO
			[ ] YES [ ] NO
			[ ] YES [ ] NO

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or under 35 U.S.C. 365(c) of any PCT international application designating the United States of America, that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

BRL 805

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. §120:

U.S. APPLICATIONS		STATUS (Check one)		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED
PCT APPLICATIONS DESIGNATING THE U.S.				
PCT APPLICATION NO.	PCT FILING DATE	U.S. SERIAL NUMBERS ASSIGNED (if any)		
PCT/FR99/02790	15 November 1999		X	

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature of Inventor 1 BARLIER Claude	Signature of Inventor 2
Date 25/6/2004	Date